



## General

### Guideline Title

Screening for asymptomatic carotid artery stenosis: U.S. Preventive Services Task Force recommendation statement.

### Bibliographic Source(s)

U.S. Preventive Services Task Force. Screening for asymptomatic carotid artery stenosis: U.S. Preventive Services Task Force recommendation statement. Ann Intern Med. 2014 Sep 2;161(5):356-62. [27 references] [PubMed](#)

### Guideline Status

This is the current release of the guideline.

This guideline updates a previous version: U.S. Preventive Services Task Force. Screening for carotid artery stenosis: U.S. Preventive Services Task Force recommendation statement. Ann Intern Med. 2007 Dec 18;147(12):854-9. [20 references]

This guideline meets NGC's 2013 (revised) inclusion criteria.

## Recommendations

### Major Recommendations

The U.S. Preventive Services Task Force (USPSTF) grades its recommendations (A, B, C, D, or I) and identifies the levels of certainty regarding net benefit (High, Moderate, and Low). The definitions of these grades can be found at the end of the "Major Recommendations" field.

#### Summary of Recommendations and Evidence

The USPSTF recommends against screening for asymptomatic carotid artery stenosis (CAS) in the general adult population. (D recommendation)

#### Clinical Considerations

##### Patient Population Under Consideration

This recommendation applies to adults without a history of transient ischemic attack, stroke, or other neurologic signs or symptoms. It is based on evidence of the benefits and harms of screening using ultrasonography to detect narrowing of the carotid arteries. A previous USPSTF review on the assessment of carotid intima-media thickness in 2009 found insufficient evidence to support its use as a screen for coronary heart disease risk. For this recommendation, the USPSTF did not review new evidence on ultrasonography to characterize carotid plaque structure or intima-media thickness and their association with cardiovascular disease events. However, clinicians considering using ultrasonography to characterize carotid plaque to stratify patient risk for cardiovascular disease should consider the same harms that the USPSTF evaluated for this recommendation (stroke, myocardial infarction [MI], and death from carotid endarterectomy [CEA]) because surgery may result from this screen.

## Assessment of Risk

The major risk factors for CAS include older age, male sex, hypertension, smoking, hypercholesterolemia, diabetes mellitus, and heart disease. Despite evidence on important risk factors, there are no externally validated, reliable methods to determine who is at increased risk for CAS or for stroke when CAS is present.

## Screening Tests

Although screening with ultrasonography has few direct harms, all screening strategies, including those with or without confirmatory tests (that is, digital subtraction or magnetic resonance angiography), have imperfect sensitivity and could lead to unnecessary surgery and result in serious harms, including death, stroke, and MI. There is no evidence that screening by auscultation of the neck to detect carotid bruits is accurate or provides benefit.

## Useful Resources

The USPSTF has made recommendations on many factors related to stroke prevention, including screening for hypertension, screening for dyslipidemia, the use of nontraditional coronary heart disease risk factors, counseling on smoking, and counseling on healthful diet and physical activity. In addition, the USPSTF recommends the use of aspirin for persons at increased risk for cardiovascular disease. These recommendations are available on the [USPSTF Web site](#) .

## Definitions:

What the United States Preventive Services Task Force (USPSTF) Grades Mean and Suggestions for Practice

Grade	Grade Definitions	Suggestions for Practice
A	The USPSTF recommends the service. There is high certainty that the net benefit is substantial.	Offer/provide this service.
B	The USPSTF recommends the service. There is high certainty that the net benefit is moderate or there is moderate certainty that the net benefit is moderate to substantial.	Offer/provide this service.
C	The USPSTF recommends selectively offering or providing this service to individual patients based on professional judgment and patient preferences. There is at least moderate certainty that the net benefit is small.	Offer/provide this service for selected patients depending on individual circumstances.
D	The USPSTF recommends against the service. There is moderate or high certainty that the service has no net benefit or that the harms outweigh the benefits.	Discourage the use of this service.
I Statement	The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of the service. Evidence is lacking, of poor quality or conflicting, and the balance of benefits and harms cannot be determined.	Read "Clinical Considerations" section of USPSTF Recommendation Statement (see "Major Recommendations" field). If the service is offered, patients should understand the uncertainty about the balance of benefits and harms.

## USPSTF Levels of Certainty Regarding Net Benefit

Definition: The U.S. Preventive Services Task Force defines certainty as "likelihood that the USPSTF assessment of the net benefit of a preventive service is correct." The net benefit is defined as benefit minus harm of the preventive service as implemented in a general, primary care population. The USPSTF assigns a certainty level based on the nature of the overall evidence available to assess the net benefit of a preventive service.

Level of Certainty	Description
High	The available evidence usually includes consistent results from well-designed, well-conducted studies in representative primary care populations. These studies assess the effects of the preventive service on health outcomes. This conclusion is therefore unlikely to be strongly affected by the results of future studies.

Moderate Certainty	Description The available evidence is sufficient to determine the effects of the preventive service on health outcomes, but confidence in the estimate is constrained by factors such as:
	<ul style="list-style-type: none"> <li>• The number, size, or quality of individual studies;</li> <li>• Inconsistency of findings across individual studies;</li> <li>• Limited generalizability of findings to routine primary care practice; or</li> <li>• Lack of coherence in the chain of evidence.</li> </ul> <p>As more information becomes available, the magnitude or direction of the observed effect could change, and this change may be large enough to alter the conclusion.</p>
Low	<p>The available evidence is insufficient to assess effects on health outcomes. Evidence is insufficient because of:</p> <ul style="list-style-type: none"> <li>• The limited number or size of studies;</li> <li>• Important flaws in study design or methods;</li> <li>• Inconsistency of findings across individual studies</li> <li>• Gaps in the chain of evidence;</li> <li>• Findings not generalizable to routine primary care practice; or</li> <li>• A lack of information on important health outcomes.</li> </ul> <p>More information may allow an estimation of effects on health outcomes.</p>

## Clinical Algorithm(s)

None available

## Scope

## Disease/Condition(s)

Carotid artery stenosis (CAS)

## Guideline Category

Prevention

Screening

## Clinical Specialty

Family Practice

Internal Medicine

Nursing

Preventive Medicine

## Intended Users

Advanced Practice Nurses

Allied Health Personnel

Health Care Providers

Nurses

Physician Assistants

Physicians

## Guideline Objective(s)

- To summarize the U.S. Preventive Services Task Force (USPSTF) recommendations and supporting scientific evidence on screening for carotid artery stenosis (CAS)
- To update the 2007 recommendations on screening for CAS

## Target Population

Adults without a history of transient ischemic attack, stroke, or other neurologic signs or symptoms

## Interventions and Practices Considered

Screening for asymptomatic carotid artery stenosis (CAS) in the general adult population (not recommended)

## Major Outcomes Considered

Key Question 1: Is there direct evidence that screening adults with duplex ultrasonography, computed tomography angiography (CTA), and/or magnetic resonance angiography (MRA) for asymptomatic carotid artery stenosis (CAS) reduces fatal or nonfatal ipsilateral stroke?

- a. Is there direct evidence for persons at decreased risk?
- b. Is there direct evidence for persons at average risk?
- c. Is there direct evidence for persons at increased risk?
- d. Does the evidence differ for subgroups defined by age, sex, race, or ethnicity?

Key Question 2: Are externally validated, reliable risk stratification tools available that distinguish persons who are more or less likely to have CAS (defined as 60% to 99% stenosis)?

Key Question 3a: What is the accuracy and reliability of screening with duplex ultrasonography, used alone or followed by CTA or MRA, to detect potentially clinically important CAS (defined as 60% to 99% stenosis)?

Key Question 3b: Do the accuracy and reliability differ for subgroups defined by age, sex, race, or ethnicity?

Key Question 4a: Are externally validated, reliable risk stratification tools available that distinguish persons with asymptomatic CAS (defined as 60% to 99% stenosis) who are at decreased or increased risk for ipsilateral stroke caused by CAS?

Key Question 4b: Are externally validated, reliable risk stratification tools available that distinguish persons with asymptomatic CAS who are at decreased or increased risk for harms from carotid endarterectomy (CEA) or carotid angioplasty and stenting (CAAS)?

Key Question 5: For persons with asymptomatic CAS (defined as 60% to 99% stenosis), does intervention with CEA or CAAS provide incremental benefit beyond current standard medical therapy for reduction of fatal or nonfatal ipsilateral stroke?

- a. Is there incremental benefit for persons at decreased risk for ipsilateral stroke caused by CAS?
- b. Is there incremental benefit for persons at average risk for ipsilateral stroke caused by CAS?
- c. Is there incremental benefit for persons at increased risk for ipsilateral stroke caused by CAS?
- d. Does the evidence differ for subgroups defined by age, sex, race, or ethnicity?

Key Question 6: For persons with asymptomatic CAS (defined as 60% to 99% stenosis), does the addition of medications (e.g., aspirin, statins) provide incremental benefit beyond current standard medical therapy that includes treatment of traditional risk factors (e.g., hypertension,

hypercholesterolemia) for reduction of fatal or nonfatal ipsilateral stroke?

- a. Is there incremental benefit for persons at decreased risk for ipsilateral stroke caused by CAS?
- b. Is there incremental benefit for persons at average risk for ipsilateral stroke caused by CAS?
- c. Is there incremental benefit for persons at increased risk for ipsilateral stroke caused by CAS?
- d. Does the evidence differ for subgroups defined by age, sex, race, or ethnicity?

Key Question 7a: What are the harms associated with screening or confirmatory testing for asymptomatic CAS?

Key Question 7b: Do the harms differ for subgroups defined by age, sex, race, or ethnicity?

Key Question 7c: Do the harms differ for subgroups defined by comorbidities?

Key Question 8a: What are the harms associated with CEA or CAAS for the treatment of asymptomatic CAS?

Key Question 8b: Do the harms differ for subgroups defined by age, sex, race, or ethnicity?

Key Question 8c: Do the harms differ for subgroups defined by comorbidities?

## Methodology

### Methods Used to Collect/Select the Evidence

Hand-searches of Published Literature (Primary Sources)

Hand-searches of Published Literature (Secondary Sources)

Searches of Electronic Databases

Searches of Unpublished Data

### Description of Methods Used to Collect/Select the Evidence

Note from the National Guideline Clearinghouse (NGC): A systematic evidence review was prepared by the RTI International–University of North Carolina Evidence-based Practice Center (EPC) for the U.S. Preventive Services Task Force (USPSTF) (see the "Availability of Companion Documents" field).

EPC staff developed an analytic framework and key questions (see the evidence review [see the "Availability of Companion Documents" field]) that guided the review. Detailed methods and additional results are publicly available in the evidence review.

Data Sources and Searches

EPC staff searched MEDLINE, the Cochrane Library, and EMBASE for English-language articles published through September 2013 (see Appendix B of the evidence review). They conducted a targeted update search of MEDLINE for trials published through 31 March 2014 and searched clinical trial registries for unpublished literature. To supplement electronic searches, EPC staff reviewed reference lists of included studies and literature suggested by reviewers.

Study Selection

Two investigators independently reviewed abstracts and full-text articles against prespecified eligibility criteria (see Appendix B, Table 1 of the evidence review). They included studies that focused on asymptomatic adults with carotid artery stenosis (CAS) and studies that analyzed the asymptomatic group separately. EPC staff included randomized, controlled trials (RCTs) of screening for CAS, RCTs and systematic reviews of treatment effectiveness, multi-institution trials or cohort studies that reported harms, and studies that attempted to externally validate risk-stratification tools. For evaluation of accuracy and reliability of ultrasonography, EPC staff focused on systematic reviews but also included primary studies that were published after the literature search cutoff of the most recent good-quality systematic review.

See Figure 1 in the evidence review for a summary of the evidence search and selection (see the "Availability of Companion Documents" field).

## Number of Source Documents

Seventy-eight articles reporting on 56 studies were included in the qualitative synthesis and 21 studies were included in the quantitative synthesis.

## Methods Used to Assess the Quality and Strength of the Evidence

Expert Consensus

Weighting According to a Rating Scheme (Scheme Given)

## Rating Scheme for the Strength of the Evidence

Two independent investigators assigned quality ratings (good, fair, or poor) for each study using predefined criteria (see Appendix D in the evidence review [see the "Availability of Companion Documents" field]).

## Methods Used to Analyze the Evidence

Meta-Analysis of Randomized Controlled Trials

Systematic Review with Evidence Tables

## Description of the Methods Used to Analyze the Evidence

Note from the National Guideline Clearinghouse (NGC): A systematic evidence review was prepared by the RTI International–University of North Carolina Evidence-based Practice Center (EPC) for the U.S. Preventive Services Task Force (USPSTF) (see the "Availability of Companion Documents" field).

Data Extraction and Quality Assessment

One investigator extracted pertinent information from each article. Another investigator reviewed extractions for completeness and accuracy. Two independent investigators assigned quality ratings (good, fair, or poor) for each study using predefined criteria. Disagreements were resolved with team discussion. Poor-quality studies are described in the full evidence synthesis report (see the "Availability of Companion Documents" field).

Data Synthesis and Analysis

EPC staff qualitatively synthesized findings for each key question by summarizing the characteristics and results of included studies in tabular or narrative format. To determine whether meta-analyses were appropriate, they assessed the clinical and methodological heterogeneity of the studies following established guidance. EPC staff conducted meta-analysis of randomized, controlled trials (RCTs) that compared carotid endarterectomy (CEA) with medical therapy for relevant outcomes reported by several studies. They used DerSimonian–Laird random-effects models to estimate pooled effects and calculated risk differences between CEA and medical therapy to show the absolute differences between groups. Absolute measures are more easily interpreted, show more directly relevant information, and better allow decision makers to assess tradeoffs between benefits and harms. EPC staff used the chi-square test to assess statistical heterogeneity in effects among studies.

To allow the comparison of rates of perioperative harms reported in RCTs with those from sources that may be more representative of real-world clinical practice, EPC staff conducted meta-analyses of cohort studies that reported perioperative (30-day) stroke or death rates. They also conducted meta-analyses of such rates reported in trials that involved CEA or carotid angioplasty and stenting (CAAS), regardless of the comparator.

EPC staff conducted sensitivity analyses using profile likelihood random-effects methods when meta-analyses included few studies. They did not include poor quality studies in analyses. Analyses were conducted using Stata, version 11.1 (StataCorp, College Station, Texas).

## Methods Used to Formulate the Recommendations

Balance Sheets

## Description of Methods Used to Formulate the Recommendations

The U.S. Preventive Services Task Force (USPSTF) systematically reviews the evidence concerning both the benefits and harms of widespread implementation of a preventive service. It then assesses the certainty of the evidence and the magnitude of the benefits and harms. On the basis of this assessment, the USPSTF assigns a letter grade to each preventive service signifying its recommendation about provision of the service (see Table below). An important, but often challenging, step is determining the balance between benefits and harms to estimate "net benefit" (that is, benefits minus harms).

Table 1. U.S. Preventive Services Task Force Recommendation Grid\*

Certainty of Net Benefit	Magnitude of Net Benefit			
	Substantial	Moderate	Small	Zero/Negative
High	A	B	C	D
Moderate	B	B	C	D
Low	Insufficient			

\*A, B, C, D, and I (*Insufficient*) represent the letter grades of recommendation or statement of insufficient evidence assigned by the USPSTF after assessing certainty and magnitude of net benefit of the service (see the "Rating Scheme for the Strength of the Recommendations" field).

The overarching question that the USPSTF seeks to answer for every preventive service is whether evidence suggests that provision of the service would improve health outcomes if implemented in a general primary care population. For screening topics, this standard could be met by a large randomized, controlled trial (RCT) in a representative asymptomatic population with follow-up of all members of both the group "invited for screening" and the group "not invited for screening."

Direct RCT evidence about screening is often unavailable, so the USPSTF considers indirect evidence. To guide its selection of indirect evidence, the USPSTF constructs a "chain of evidence" within an analytic framework. For each key question, the body of pertinent literature is critically appraised, focusing on the following 6 questions:

1. Do the studies have the appropriate research design to answer the key question(s)?
2. To what extent are the existing studies of high quality? (i.e., what is the internal validity?)
3. To what extent are the results of the studies generalizable to the general U.S. primary care population and situation? (i.e., what is the external validity?)
4. How many studies have been conducted that address the key question(s)? How large are the studies? (i.e., what is the precision of the evidence?)
5. How consistent are the results of the studies?
6. Are there additional factors that assist the USPSTF in drawing conclusions (e.g., presence or absence of dose–response effects, fit within a biologic model)?

The next step in the USPSTF process is to use the evidence from the key questions to assess whether there would be net benefit if the service were implemented. In 2001, the USPSTF published an article that documented its systematic processes of evidence evaluation and recommendation development. At that time, the USPSTF's overall assessment of evidence was described as good, fair, or poor. The USPSTF realized that this rating seemed to apply only to how well studies were conducted and did not fully capture all of the issues that go into an overall assessment of the evidence about net benefit. To avoid confusion, the USPSTF has changed its terminology. Whereas individual study quality will continue to be characterized as good, fair, or poor, the term certainty will now be used to describe the USPSTF's assessment of the overall body of evidence about net benefit of a preventive service and the likelihood that the assessment is correct. Certainty will be determined by considering all 6 questions listed above; the judgment about certainty will be described as high, moderate, or low.

In making its assessment of certainty about net benefit, the evaluation of the evidence from each key question plays a primary role. It is important to note that the USPSTF makes recommendations for real-world medical practice in the United States and must determine to what extent the evidence for each key question—even evidence from screening RCTs or treatment RCTs—can be applied to the general primary care population. Frequently, studies are conducted in highly selected populations under special conditions. The USPSTF must consider differences between the

general primary care population and the populations studied in RCTs and make judgments about the likelihood of observing the same effect in actual practice.

It is also important to note that one of the key questions in the analytic framework refers to the potential harms of the preventive service. The USPSTF considers the evidence about the benefits and harms of preventive services separately and equally. Data about harms are often obtained from observational studies because harms observed in RCTs may not be representative of those found in usual practice and because some harms are not completely measured and reported in RCTs.

Putting the body of evidence for all key questions together as a chain, the USPSTF assesses the certainty of net benefit of a preventive service by asking the 6 major questions listed above. The USPSTF would rate a body of convincing evidence about the benefits of a service that, for example, derives from several RCTs of screening in which the estimate of benefits can be generalized to the general primary care population as "high" certainty (see the "Rating Scheme for the Strength of the Recommendations" field). The USPSTF would rate a body of evidence that was not clearly applicable to general practice or has other defects in quality, research design, or consistency of studies as "moderate" certainty. Certainty is "low" when, for example, there are gaps in the evidence linking parts of the analytic framework, when evidence to determine the harms of treatment is unavailable, or when evidence about the benefits of treatment is insufficient. Table 4 in the methodology document listed below (see the "Availability of Companion Documents" field) summarizes the current terminology used by the USPSTF to describe the critical assessment of evidence at all 3 levels: individual studies, key questions, and overall certainty of net benefit of the preventive service.

Sawaya GF, Guirguis-Blake J, LeFevre M, Harris R, Petitti D; U.S. Preventive Services Task Force. Update on the methods of the U.S. Preventive Services Task Force: estimating certainty and magnitude of net benefit. *Ann Intern Med*. 2007;147(12):871-875. [5 references].

## Rating Scheme for the Strength of the Recommendations

What the United States Preventive Services Task Force (USPSTF) Grades Mean and Suggestions for Practice

Grade	Grade Definitions	Suggestions for Practice
A	The USPSTF recommends the service. There is high certainty that the net benefit is substantial.	Offer/provide this service.
B	The USPSTF recommends the service. There is high certainty that the net benefit is moderate or there is moderate certainty that the net benefit is moderate to substantial.	Offer/provide this service.
C	The USPSTF recommends selectively offering or providing this service to individual patients based on professional judgment and patient preferences. There is at least moderate certainty that the net benefit is small.	Offer/provide this service for selected patients depending on individual circumstances.
D	The USPSTF recommends against the service. There is moderate or high certainty that the service has no net benefit or that the harms outweigh the benefits.	Discourage the use of this service.
I Statement	The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of the service. Evidence is lacking, of poor quality or conflicting, and the balance of benefits and harms cannot be determined.	Read "Clinical Considerations" section of USPSTF Recommendation Statement (see "Major Recommendations" field). If the service is offered, patients should understand the uncertainty about the balance of benefits and harms.

### USPSTF Levels of Certainty Regarding Net Benefit

Definition: The U.S. Preventive Services Task Force defines certainty as "likelihood that the USPSTF assessment of the net benefit of a preventive service is correct." The net benefit is defined as benefit minus harm of the preventive service as implemented in a general, primary care population. The USPSTF assigns a certainty level based on the nature of the overall evidence available to assess the net benefit of a preventive service.

Level of Certainty	Description
High	The available evidence usually includes consistent results from well-designed, well-conducted studies in representative primary care populations. These studies assess the effects of the preventive service on health outcomes. This conclusion is therefore unlikely to be strongly affected by the results of future studies.
Moderate	<p>The available evidence is sufficient to determine the effects of the preventive service on health outcomes, but confidence in the estimate is constrained by factors such as:</p> <ul style="list-style-type: none"> <li>• The number, size, or quality of individual studies;</li> <li>• Inconsistency of findings across individual studies;</li> <li>• Limited generalizability of findings to routine primary care practice; or</li> <li>• Lack of coherence in the chain of evidence.</li> </ul> <p>As more information becomes available, the magnitude or direction of the observed effect could change, and this change may be large enough to alter the conclusion.</p>
Low	<p>The available evidence is insufficient to assess effects on health outcomes. Evidence is insufficient because of:</p> <ul style="list-style-type: none"> <li>• The limited number or size of studies;</li> <li>• Important flaws in study design or methods;</li> <li>• Inconsistency of findings across individual studies</li> <li>• Gaps in the chain of evidence;</li> <li>• Findings not generalizable to routine primary care practice; or</li> <li>• A lack of information on important health outcomes.</li> </ul> <p>More information may allow an estimation of effects on health outcomes.</p>

## Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

## Method of Guideline Validation

Comparison with Guidelines from Other Groups

External Peer Review

Internal Peer Review

## Description of Method of Guideline Validation

Peer Review. Before the U.S. Preventive Services Task Force (USPSTF) makes its final determinations about recommendations on a given preventive service, the Evidence-based Practice Center and the Agency for Healthcare Research and Quality send the draft evidence review to 4 to 6 external experts and to Federal agencies and professional and disease-based health organizations with interests in the topic. The experts are asked to examine the review critically for accuracy and completeness and to respond to a series of specific questions about the document. After assembling these external review comments and documenting the proposed response to key comments, the topic team presents this information to the USPSTF in memo form. In this way, the USPSTF can consider these external comments before it votes on its recommendations about the service. Draft recommendation statements are then circulated for comment among reviewers representing professional societies, voluntary organizations, and Federal agencies, as well as posted on the USPSTF Web site for public comment. These comments are discussed before the final recommendations are confirmed.

Response to Public Comment. A draft version of this recommendation statement was posted for public comment on the USPSTF Web site from 18 February through 17 March 2014. All comments were reviewed and considered by the USPSTF. Many commenters agreed with the draft

recommendation. Several requested clarification on the focus of this recommendation; the recommendation statement was revised to clarify that, for this recommendation, the USPSTF did not review new evidence on the use of carotid artery ultrasonography to evaluate risk for cardiovascular disease. A few commenters provided citations for related medical articles, and the USPSTF reviewed these for relevance to the current recommendation.

Comparison with Guidelines from Other Groups. Recommendations for screening from the following groups were discussed: the American Heart Association, the American Stroke Association, the American College of Cardiology Foundation, the American Association of Neurological Surgeons, the American College of Radiology, the American Society of Neuroradiology, the Society for Vascular Surgery, the Society for Vascular Medicine, and the American Academy of Family Physicians.

## Evidence Supporting the Recommendations

### Type of Evidence Supporting the Recommendations

The type of evidence supporting the recommendations is not specifically stated.

## Benefits/Harms of Implementing the Guideline Recommendations

### Potential Benefits

#### Benefits of Detection and Early Intervention

There is no direct evidence on the benefits of screening for carotid artery stenosis (CAS). Adequate evidence indicates that in selected trial participants with asymptomatic CAS, carotid endarterectomy (CEA) performed by selected surgeons reduces the absolute incidence of all strokes or perioperative death by approximately 3.5% compared with (outdated) medical management. However, this difference is probably smaller with current optimal medical management. The magnitude of these benefits would be smaller in asymptomatic persons in the general population. For the general primary care population, the magnitude of benefit is small to none. There is no evidence that identification of asymptomatic CAS leads to any benefit from adding or increasing medication doses (beyond current standard medical therapy for cardiovascular disease prevention).

### Potential Harms

#### Harms of Detection and Early Intervention

Adequate evidence indicates that both the testing strategy for carotid artery stenosis (CAS) and treatment with carotid endarterectomy (CEA) can cause harms. Although screening with ultrasonography has few direct harms, all screening strategies, including those with or without confirmatory tests (that is, digital subtraction or magnetic resonance angiography), have imperfect sensitivity and specificity and could lead to unnecessary interventions and result in serious harms. In selected centers similar to those in the trials, CEA is associated with a 30-day stroke or mortality rate of approximately 2.4%; reported rates are as high as approximately 5% in low-volume centers and 6% in certain states. Myocardial infarctions (MIs) are reported in 0.8% to 2.2% of patients after CEA. The 30-day stroke or mortality rate after carotid angioplasty and stenting (CAAS) is approximately 3.1% to 3.8%. The overall magnitude of harms of screening and subsequent treatment of asymptomatic CAS is small to moderate depending on patient population, surgeon, center volume, and geographic location.

## Qualifying Statements

### Qualifying Statements

- The U.S. Preventive Services Task Force (USPSTF) makes recommendations about the effectiveness of specific clinical preventive services for patients without related signs or symptoms.
- It bases its recommendations on the evidence of both the benefits and harms of the service and an assessment of the balance. The USPSTF

does not consider the costs of providing a service in this assessment.

- The USPSTF recognizes that clinical decisions involve more considerations than evidence alone. Clinicians should understand the evidence but individualize decision making to the specific patient or situation. Similarly, the USPSTF notes that policy and coverage decisions involve considerations in addition to the evidence of clinical benefits and harms.
- Recommendations made by the USPSTF are independent of the U.S. government. They should not be construed as an official position of the Agency for Healthcare Research and Quality or the U.S. Department of Health and Human Services.

## Implementation of the Guideline

### Description of Implementation Strategy

The experiences of the first and second U.S. Preventive Services Task Force (USPSTF), as well as that of other evidence-based guideline efforts, have highlighted the importance of identifying effective ways to implement clinical recommendations. Practice guidelines are relatively weak tools for changing clinical practice when used in isolation. To effect change, guidelines must be coupled with strategies to improve their acceptance and feasibility. Such strategies include enlisting the support of local opinion leaders, using reminder systems for clinicians and patients, adopting standing orders, and audit and feedback of information to clinicians about their compliance with recommended practice.

In the case of preventive services guidelines, implementation needs to go beyond traditional dissemination and promotion efforts to recognize the added patient and clinician barriers that affect preventive care. These include clinicians' ambivalence about whether preventive medicine is part of their job, the psychological and practical challenges that patients face in changing behaviors, lack of access to health care or of insurance coverage for preventive services for some patients, competing pressures within the context of shorter office visits, and the lack of organized systems in most practices to ensure the delivery of recommended preventive care.

Dissemination strategies have changed dramatically in this age of electronic information. While recognizing the continuing value of journals and other print formats for dissemination, the USPSTF will make all its products available through its [Web site](#) . The combination of electronic access and extensive material in the public domain should make it easier for a broad audience of users to access USPSTF materials and adapt them for their local needs. Online access to USPSTF products also opens up new possibilities for the appearance of the annual, pocket-size Guide to Clinical Preventive Services.

To be successful, approaches for implementing prevention have to be tailored to the local level and deal with the specific barriers at a given site, typically requiring the redesign of systems of care. Such a systems approach to prevention has had notable success in established staff-model health maintenance organizations, by addressing organization of care, emphasizing a philosophy of prevention, and altering the training and incentives for clinicians. Staff-model plans also benefit from integrated information systems that can track the use of needed services and generate automatic reminders aimed at patients and clinicians, some of the most consistently successful interventions. Information systems remain a major challenge for individual clinicians' offices, however, as well as for looser affiliations of practices in network-model managed care and independent practice associations, where data on patient visits, referrals, and test results are not always centralized.

### Implementation Tools

Foreign Language Translations

Mobile Device Resources

Patient Resources

Pocket Guide/Reference Cards

Staff Training/Competency Material

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

## Institute of Medicine (IOM) National Healthcare Quality Report Categories

# IOM Care Need

Staying Healthy

## IOM Domain

Effectiveness

Patient-centeredness

## Identifying Information and Availability

### Bibliographic Source(s)

U.S. Preventive Services Task Force. Screening for asymptomatic carotid artery stenosis: U.S. Preventive Services Task Force recommendation statement. *Ann Intern Med.* 2014 Sep 2;161(5):356-62. [27 references] [PubMed](#)

### Adaptation

Not applicable: The guideline was not adapted from another source.

### Date Released

1996 (revised 2014 Sep 2)

### Guideline Developer(s)

U.S. Preventive Services Task Force - Independent Expert Panel

### Guideline Developer Comment

The U.S. Preventive Services Task Force (USPSTF) is a federally-appointed panel of independent experts. Conclusions of the U.S. Preventive Services Task Force do not necessarily reflect policy of the U.S. Department of Health and Human Services (DHHS) or its agencies.

### Source(s) of Funding

The U.S. Preventive Services Task Force (USPSTF) is an independent, voluntary body. The U.S. Congress mandates that the Agency for Healthcare Research and Quality support the operations of the USPSTF.

### Guideline Committee

U.S. Preventive Services Task Force (USPSTF)

### Composition of Group That Authored the Guideline

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### Disclosures

Dr. Gillman reports royalties from UpToDate and Cambridge University Press outside the submitted work. Authors not named here have disclosed no conflicts of interest. Authors followed the policy regarding conflicts of interest described at <http://www.uspreventiveservicestaskforce.org/Page/Name/methods-and-processes> . Disclosures can also be viewed at [www.acponline.org/authors/icmje/ConflictOfInterestForms.do?msNum=M14-1333](http://www.acponline.org/authors/icmje/ConflictOfInterestForms.do?msNum=M14-1333) .

## Guideline Status

This is the current release of the guideline.

This guideline updates a previous version: U.S. Preventive Services Task Force. Screening for carotid artery stenosis: U.S. Preventive Services Task Force recommendation statement. *Ann Intern Med.* 2007 Dec 18;147(12):854-9. [20 references]

This guideline meets NGC's 2013 (revised) inclusion criteria.

## Guideline Availability

Electronic copies: Available from the [Annals of Internal Medicine Web site](#) .

## Availability of Companion Documents

The following are available:

### Evidence Reviews:

- Jonas DE, Feltner C, Amick HR, Sheridan S, Zheng ZJ, Watford DJ, Carter JL, Rowe CJ, Harris R. Screening for asymptomatic carotid artery stenosis: a systematic review and meta-analysis for the U.S. Preventive Services Task Force. Evidence Synthesis No. 111. AHRQ Publication No. 13-05178-EF-1. Rockville (MD): Agency for Healthcare Research and Quality; 2014 Jul. 165 p.
- Jonas DE, Feltner C, Amick HR, Sheridan S, Zheng ZJ, Watford DJ, Carter JL, Rowe CJ, Harris R. Screening for asymptomatic carotid artery stenosis: a systematic review and meta-analysis for the U.S. Preventive Services Task Force. *Ann Intern Med.* 2014;161(5):336-346.

Electronic copies: Available from the [U.S. Preventive Services Task Force \(USPSTF\) Web site](#) .

## Background Articles:

- Barton MB et al. How to read the new recommendation statement: methods update from the U.S. Preventive Services Task Force. *Ann Intern Med* 2007;147:123-127.
- Guirguis-Blake J et al. Current processes of the U.S. Preventive Services Task Force: refining evidence-based recommendation development. *Ann Intern Med* 2007;147:117-122.
- Sawaya GF et al. Update on the methods of the U.S. Preventive Services Task Force: estimating certainty and magnitude of net benefit. *Ann Intern Med* 2007;147:871-875.

Electronic copies: Available from [USPSTF Web site](#) .

The following are also available:

- Screening for asymptomatic carotid artery stenosis. Clinical summary of U.S. Preventive Services Task Force recommendation. 2014 Jul. 1 p. Electronic copies: Available from the [USPSTF Web site](#) .
- A continuing medical education (CME) activity is available from the [Annals of Internal Medicine Web site](#) .
- The guide to clinical preventive services, 2014. Recommendations of the U.S. Preventive Services Task Force. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2014. 144 p. Electronic copies: Available from the [AHRQ Web site](#) .

The [Electronic Preventive Services Selector \(ePSS\)](#)  is an application designed to provide primary care clinicians and health care teams timely decision support regarding appropriate screening, counseling, and preventive services for their patients. It is based on the current, evidence-based recommendations of the USPSTF and can be searched by specific patient characteristics, such as age, sex, and selected behavioral risk factors.

## Patient Resources

The following are available:

Screening for carotid artery stenosis. Understanding task force recommendations. U.S. Preventive Services Task Force. Consumer fact sheet. 2014 Jul. 4 p. Electronic copies: Available from the [U.S. Preventive Services Task Force \(USPSTF\) Web site](#) .

Screening for carotid artery stenosis: U.S. Preventive Services Task Force recommendation statement. Summaries for patients. *Ann Intern Med*. 2014 Sep 2;161(8):356-362. Electronic copies: Available from the [Annals of Internal Medicine Web site](#) .

Women: stay healthy at any age. 2014 update. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ). AHRQ Pub. No. 14-IP007-A. 2014 Mar. 5 p. Electronic copies: Available in [English](#)  and [Spanish](#)  from the AHRQ Web site.

Men: stay healthy at any age. 2014 update. Rockville (MD): Agency for Healthcare Research and Quality. AHRQ Pub. No. 14-IP006-A. 2014 Mar. 5 p. Electronic copies: Available in [English](#)  and [Spanish](#)  from the AHRQ Web site.

Women: stay healthy at 50+. 2014 update. Rockville (MD): Agency for Healthcare Research and Quality. AHRQ Pub. No. 14-IP002-A. 2014 Mar. 5 p. Electronic copies: Available in [English](#)  and [Spanish](#)  from the AHRQ Web site.

Men: stay healthy at 50+. 2014 update. Rockville (MD): Agency for Healthcare Research and Quality. AHRQ Pub. No. 14-IP009-A. 2014 Mar. 5 p. Electronic copies: Available in [English](#)  and [Spanish](#)  from the AHRQ Web site.

Print copies: Available in English and Spanish from the AHRQ Publications Clearinghouse. For more information, go to <http://www.ahrq.gov/research/publications/index.html>  or call 1-800-358-9295 (U.S. only).

Myhealthfinder is a tool that provides personalized recommendations for clinical preventive services specific to the user's age, gender, and pregnancy status. It features evidence-based recommendations from the USPSTF and is available at [www.healthfinder.gov](http://www.healthfinder.gov) .

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a

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## NGC Status

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